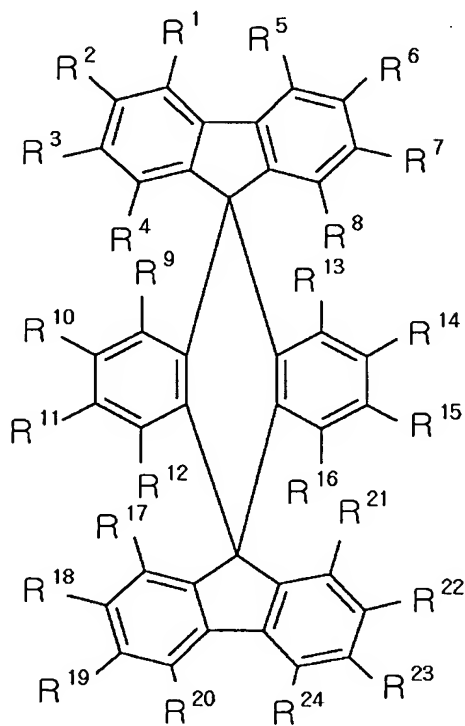


AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) An organic electroluminescent ("EL") device comprising :
- an anode; a cathode; and at least one layer located between the anode and the cathode, wherein the at least one layer comprises a light-emitting layer ~~and~~ having a double-spiro compound of the Chemical Formula I:



Chemical Formula I,

wherein R1 through R24 are substituent groups, identical or different, and
wherein not all of R1 through R24 are hydrogen.

2. (Original) The organic EL device of Claim 1, wherein the light-emitting layer comprises the double-spiro compound having a band gap corresponding to visible light emission.

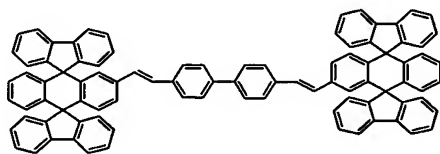
3. (Original) The organic EL device of Claim 2, wherein the band-gap for the visible light emission is from about 1.8 eV to about 3.5 eV.

4. (Original) The organic EL device of Claim 1, wherein the light-emitting layer comprises a fluorescent or phosphorescent material.

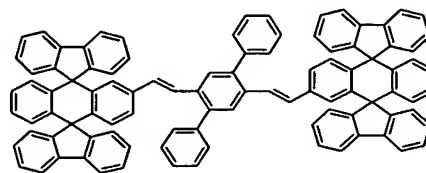
5. (Original) The organic EL device of Claim 1, further comprising a substrate, wherein the substrate contacts either the anode or the cathode.

6. (Original) The organic EL device of Claim 1, wherein the at least one layer comprises the double-spiro compound having one or more properties selected from the group consisting of electron injection, electron transportation, light emission, hole transportation, and hole injection.

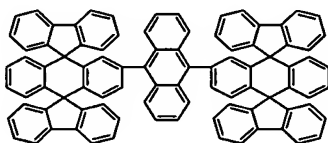
7. (Original) The organic EL device of Claim 1, wherein the light-emitting layer comprises at least one compound selected from the group consisting of Chemical Compounds 100-137, 200-222, and 400-413 as shown below:



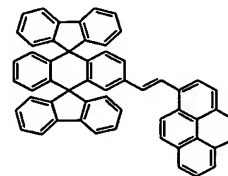
Chemical Compound 100



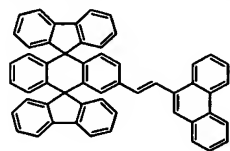
Chemical Compound 101



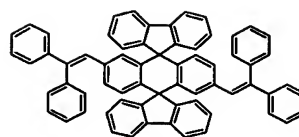
Chemical Compound 102



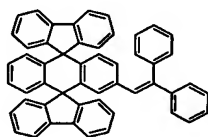
Chemical Compound 103



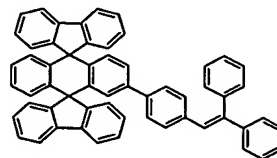
Chemical Compound 104



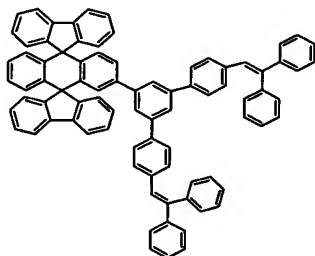
Chemical Compound 105



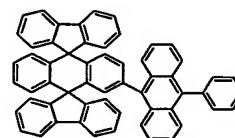
Chemical Compound 106



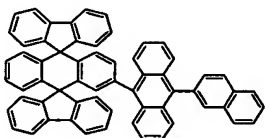
Chemical Compound 107



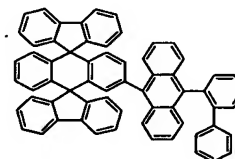
Chemical Compound 108



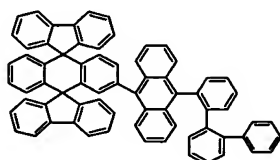
Chemical Compound 109



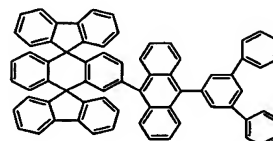
Chemical Compound 110



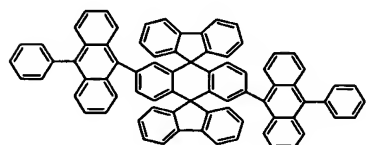
Chemical Compound 111



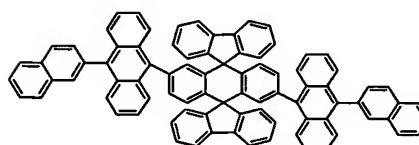
Chemical Compound 112



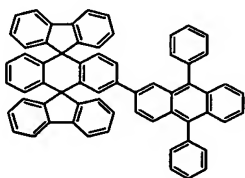
Chemical Compound 113



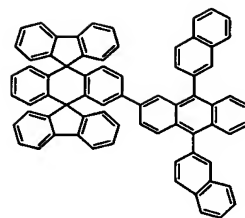
Chemical Compound 114



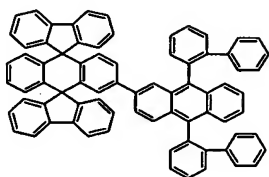
Chemical Compound 115



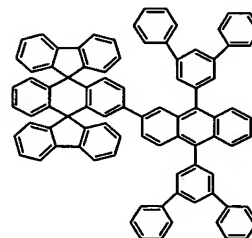
Chemical Compound 116



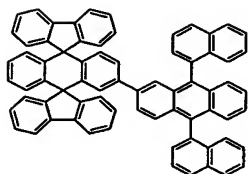
Chemical Compound 117



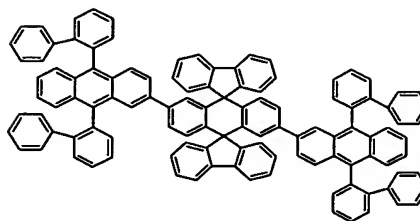
Chemical Compound 118



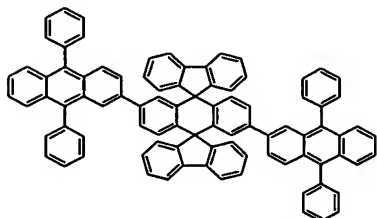
Chemical Compound 119



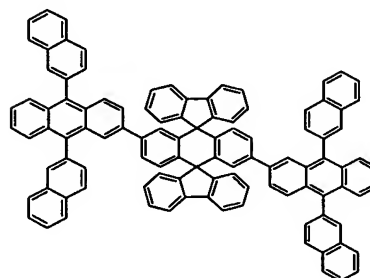
Chemical Compound 120



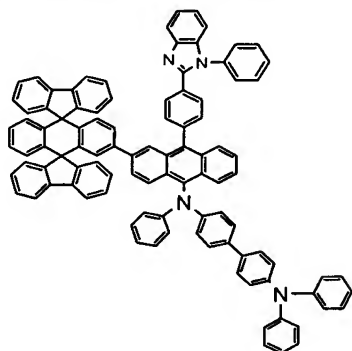
Chemical Compound 121



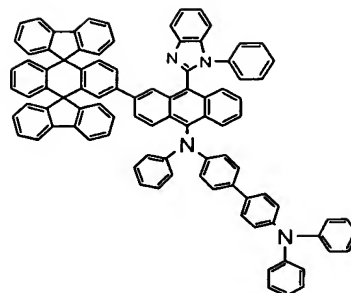
Chemical Compound 122



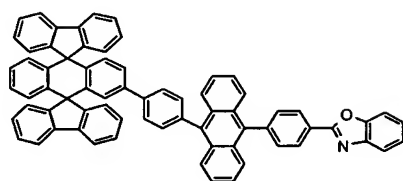
Chemical Compound 123



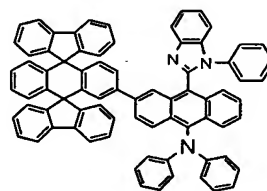
Chemical Compound 124



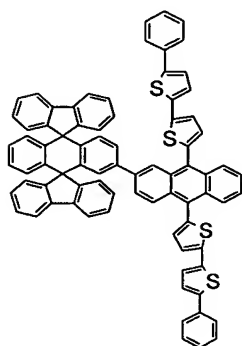
Chemical Compound 125



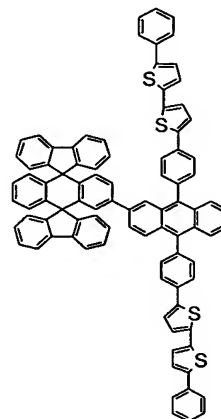
Chemical Compound 126



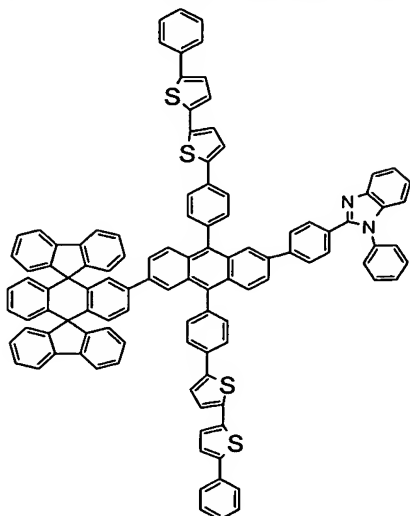
Chemical Compound 127



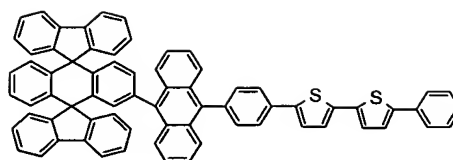
Chemical Compound 128



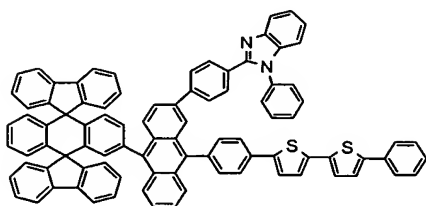
Chemical Compound 129



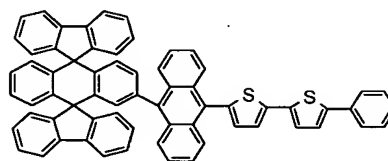
Chemical Compound 130



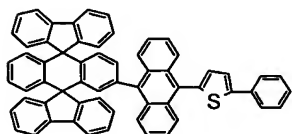
Chemical Compound 131



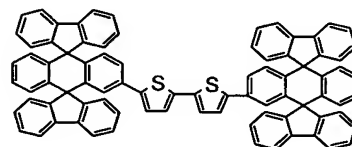
Chemical Compound 132



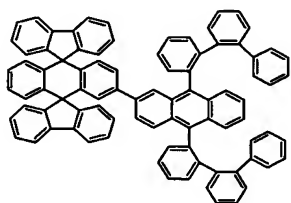
Chemical Compound 133



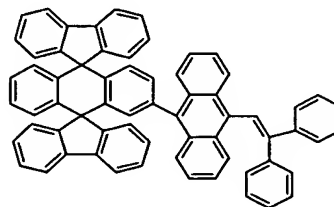
Chemical Compound 134



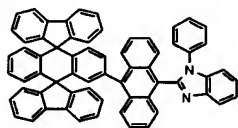
Chemical Compound 135



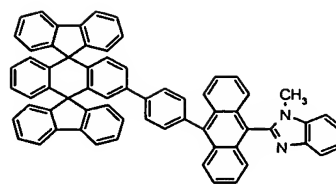
Chemical Compound 136



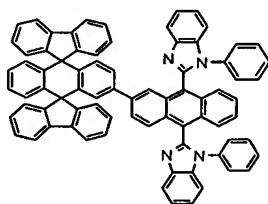
Chemical Compound 137



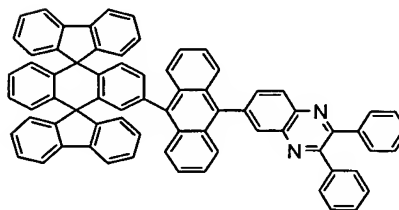
Chemical Compound 200



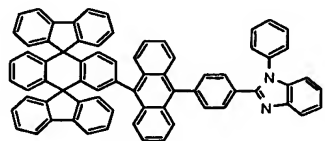
Chemical Compound 201



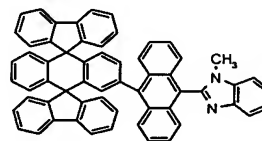
Chemical Compound 202



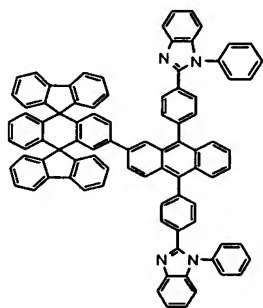
Chemical Compound 203



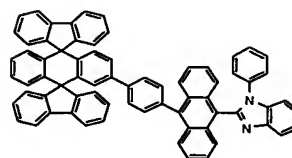
Chemical Compound 204



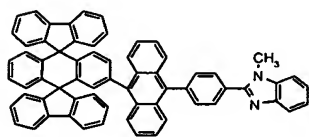
Chemical Compound 205



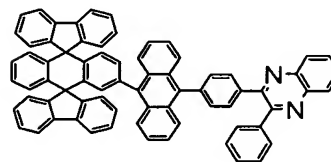
Chemical Compound 206



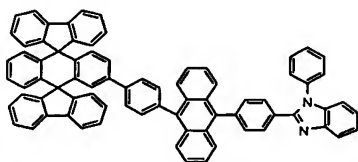
Chemical Compound 207



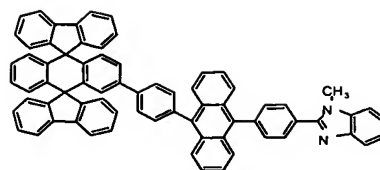
Chemical Compound 208



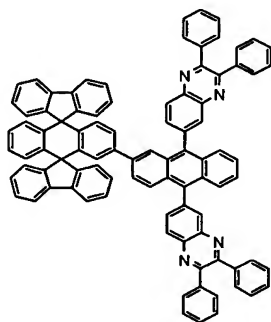
Chemical Compound 209



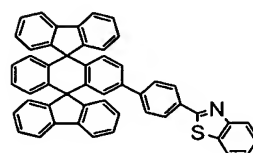
Chemical Compound 210



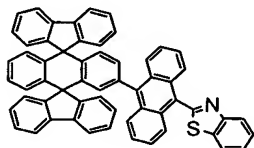
Chemical Compound 211



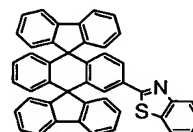
Chemical Compound 212



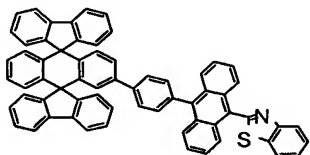
Chemical Compound 213



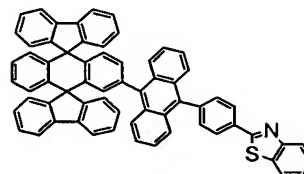
Chemical Compound 214



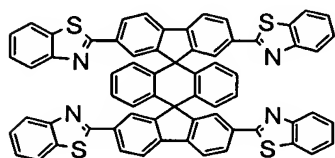
Chemical Compound 215



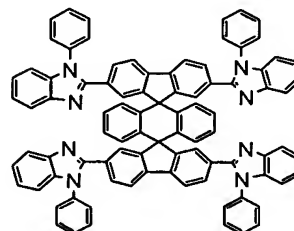
Chemical Compound 216



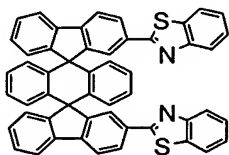
Chemical Compound 217

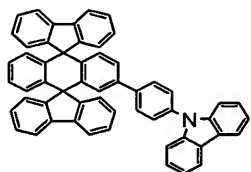


Chemical Compound 218

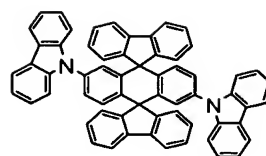


Chemical Compound 219

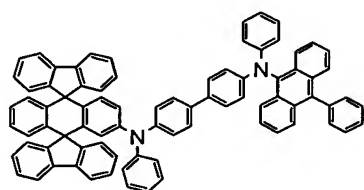




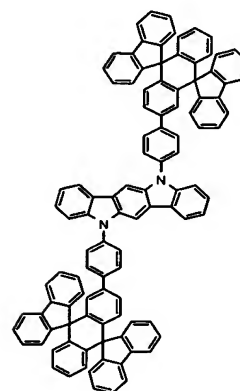
Chemical Compound 406



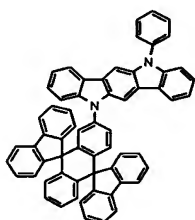
Chemical Compound 407



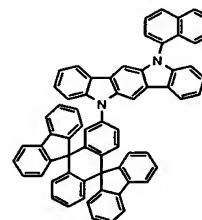
Chemical Compound 408



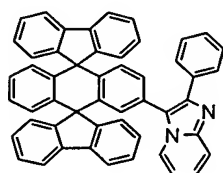
Chemical Compound 409



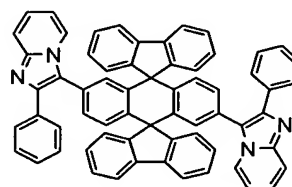
Chemical Compound 410



Chemical Compound 411



Chemical compound 412



Chemical Compound 413

8. (Original) The organic EL device of Claim 7, wherein the light-emitting layer further comprises a non-double-spiro light-emitting compound.

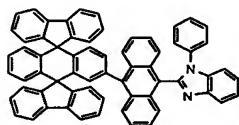
9. (Original) The organic EL device of Claim 8, wherein the non-double-spiro light-emitting compound has a band gap smaller than a band gap of the double-spiro compound.

10. (Original) The organic EL device of Claim 8, wherein the non-double-spiro light-emitting compound has a band gap greater than a band gap of the double-spiro compound.

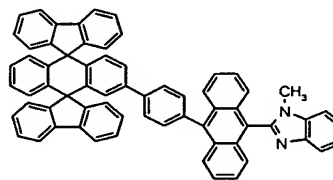
11. (Original) The organic EL device of Claim 8, wherein the non-double-spiro light-emitting compound is either fluorescent or phosphorescent compound.

12. (Currently Amended) The organic EL device of Claim 1, wherein the at least one layer further comprises at least one of an electron-injecting and an electron-transporting layer.

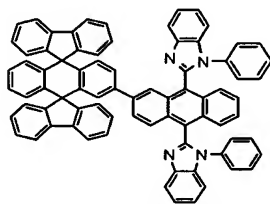
13. (Original) The organic EL device of Claim 12, wherein the at least one of the electron-injecting and electron-transporting layers comprises at least one compound selected from the group consisting of Chemical Compounds 200-222 as shown below:



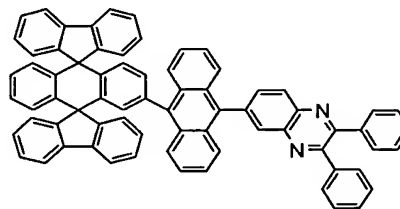
Chemical Compound 200



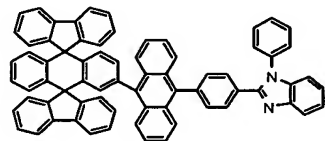
Chemical Compound 201



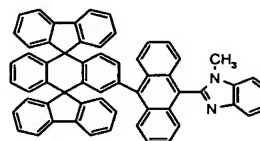
Chemical Compound 202



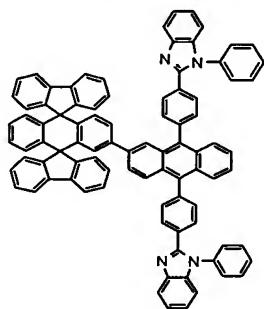
Chemical Compound 203



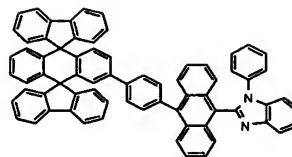
Chemical Compound 204



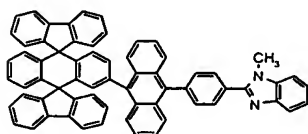
Chemical Compound 205



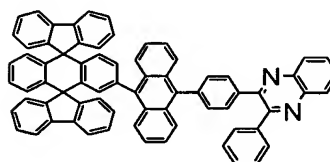
Chemical Compound 206



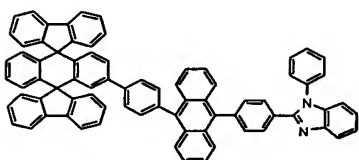
Chemical Compound 207



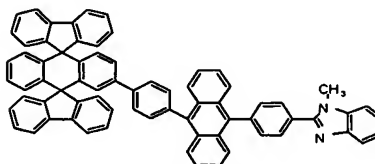
Chemical Compound 208



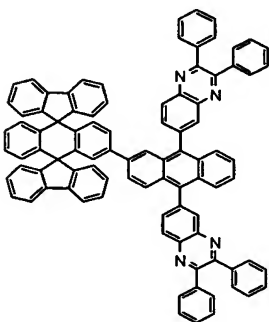
Chemical Compound 209



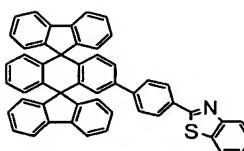
Chemical Compound 210



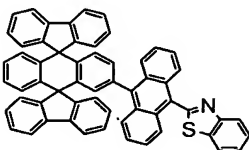
Chemical Compound 211



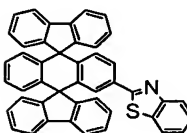
Chemical Compound 212



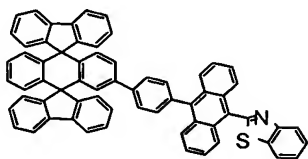
Chemical Compound 213



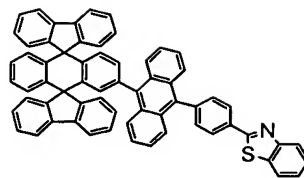
Chemical Compound 214



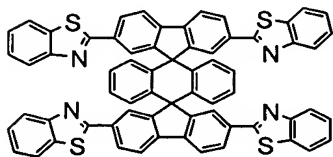
Chemical Compound 215



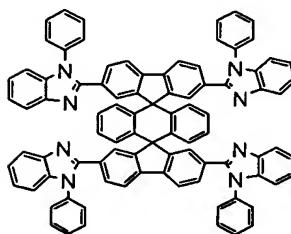
Chemical Compound 216



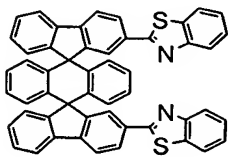
Chemical Compound 217



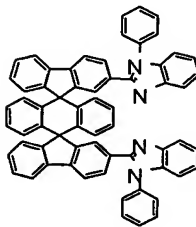
Chemical Compound 218



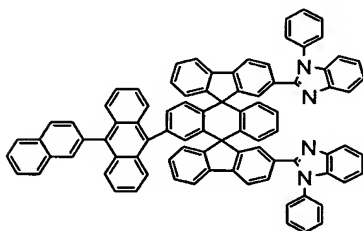
Chemical Compound 219



Chemical Compound 220



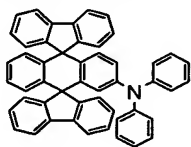
Chemical Compound 221



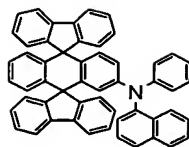
Chemical Compound 222.

14. (Currently Amended) The organic EL device of Claim 1, wherein the at least one layer further comprises at least one of a hole-injecting layer and a hole-transporting layer.

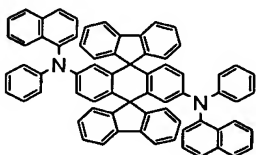
15. (Original) The organic EL device of Claim 14, wherein the at least one of the hole-injecting and hole-transporting layers comprises at least one compound selected from the group consisting of Chemical Compounds 300- 308 and 400-413 as shown below:



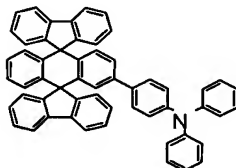
Chemical Compound 300



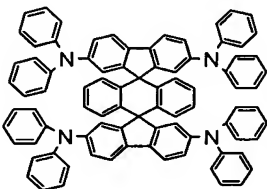
Chemical Compound 301



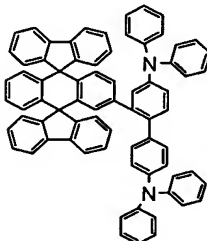
Chemical Compound 302



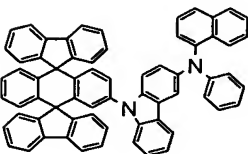
Chemical Compound 303



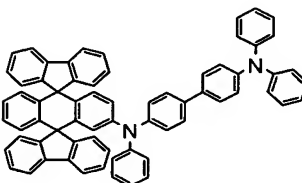
Chemical Compound 304



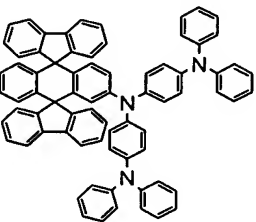
Chemical Compound 305



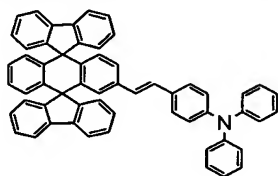
Chemical Compound 306



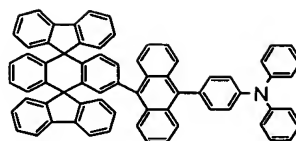
Chemical Compound 307



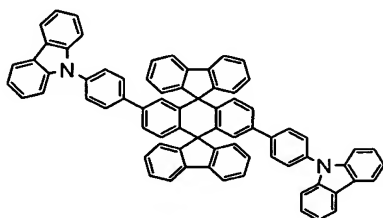
Chemical Compound 308



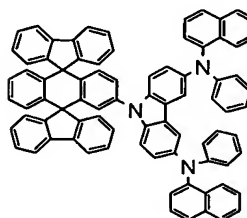
Chemical Compound 400



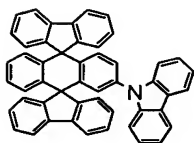
Chemical Compound 401



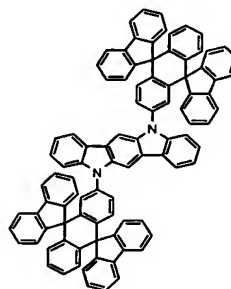
Chemical Compound 402



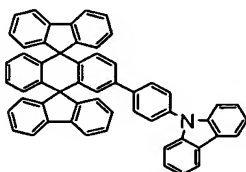
Chemical Compound 403



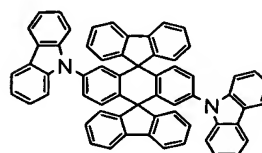
Chemical Compound 404



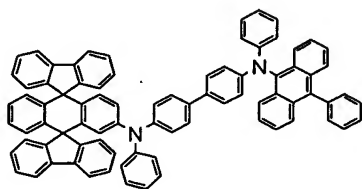
Chemical Compound 405



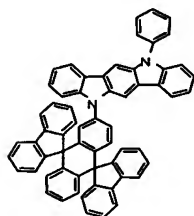
Chemical Compound 406



Chemical Compound 407

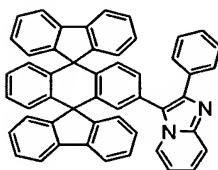


Chemical Compound 409



The chemical structure of compound 1 is a complex polycyclic aromatic hydrocarbon. It features a central nitrogen atom (N) bonded to two phenyl rings. One of these phenyl rings is further substituted with a naphthalene group. The overall structure is highly symmetrical and consists of multiple fused and linked benzene rings.

Chemical Compound 411



Chemical Compound 413.

the cathode injecting electrons toward the light-emitting layer;

the anode injecting holes toward the light-emitting layer; and

allowing recombination of at least part of the injected electrons and holes in the light-emitting layer, thereby generating visible light from the light-emitting layer.

18. (Withdrawn) The method of Claim 17, wherein the light-emitting layer comprises the double-spiro compound having a light-emitting property.

19. (Withdrawn) The method of Claim 18, wherein the light-emitting layer further comprises a non-double-spiro light-emitting compound.

20. (Withdrawn) The method of Claim 17, wherein the at least one layer comprises the double-spiro compound having one or more properties selected from the group consisting of visible light emission, electron transportation, electron injection, hole transportation, and hole injection.

21. (Withdrawn) A method of manufacturing the organic EL device of Claim 1, the method comprising:

forming a first conductive layer;

depositing a material comprising the double-spiro compound of the Chemical Formula I on a first conductive layer so as to form at least one layer comprising the light-emitting layer; and

forming a second conductive layer on the material, wherein either of the first and second conductive layers corresponds to the anode or cathode.

22. (Withdrawn) The method of Claim 21, wherein the formation of the light-emitting layer comprises depositing the double-spiro compound having a light-emitting property.

23. (Withdrawn) The method of Claim 22, wherein the formation of the light-emitting layer comprises co-depositing a non-double-spiro light-emitting compound.

24. (Withdrawn) The method of Claim 21, wherein the formation of the at least one layer comprises forming layers having one or more functions selected from the group consisting of visible light emission, electron transportation, electron injection, hole transportation, and hole injection.

25. (Withdrawn) The method of Claim 24, wherein the formation of the layers having one or more functions comprises depositing a double-spiro compound.

26. (Withdrawn) The method of Claim 24, wherein the formation of the layers having one or more functions comprises depositing a non-double-spiro compound.